REPORT

HANSHIN UNIVERSITY

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제출일	I	2019년 11월 4일

Vscores

1. Test H0: mu8 = mu9 = mu10 = mu11
2. Do profile analysis
3. plot data effectively

Test

```
library(tidyverse)
vscores_df <- data.frame(ID = rep(c(1:36),4),
                         GROUP = rep(c("G8","G9","G10","G11"),each=36),
                         VALUE = c(vscores$G8,vscores$G9,vscores$G10,vscores$G11)) %>%
              mutate(ID = as.factor(ID), GROUP = as.factor(GROUP))
ANOVA_MODEL = aov(VALUE ~ GROUP, data=vscores_df)
summary(ANOVA_MODEL)

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             Df Sum Sq Mean Sq F value   Pr(>F)
GROUP         3  111.3   37.09   7.422  0.00012 ***
Residuals   140  699.6    5.00
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

Do profile analysis

```
vscores = vscores[,-1]
C = matrix(c(1, -1,  0,  0,
             0,  1, -1,  0,
             0,  0,  1, -1), ncol = 4, byrow=T)
vscores.ramus = as.data.frame(as.matrix(vscores) %*% t(C))

library(ICSNP)
HotellingsT2(vscores.ramus, test="f")

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        Hotelling's one sample T2-test

data:  vscores.ramus
T.2 = 54.328, df1 = 3, df2 = 33, p-value = 7.365e-13
alternative hypothesis: true location is not equal to c(0,0,0)`
```

plot data effectively

```
library(tidyverse)
vscores_df <- data.frame(ID = rep(c(1:36), 4),
                         GROUP = rep(c("G8", "G9", "G10", "G11"), each = 36),
                         VALUE = c(vscores$G8,vscores$G9,vscores$G10,vscores$G11)) %>%
              mutate(ID = as.factor(ID), GROUP = as.factor(GROUP))
with(vscores_df, interaction.plot(x.factor = GROUP, trace.factor = ID, response = VALUE, legend = FALSE))
```